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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,881	11/27/2002	Christopher Kapusta	126715-1	5282
23413	7590	04/05/2005	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			DOAN, JENNIFER	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/065,881	Applicant(s) KAPUSTA ET AL.	
	Examiner Jennifer Doan	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 28-30 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-27 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 12, 31 and 33 is/are rejected.
- 7) ☒ Claim(s) 5, 10, 11, 13-17, 32 and 34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>022403 & 120304</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of 1-27 and 31-34 in the reply filed on 01/07/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Information Disclosure Statement

2. The prior art documents submitted by applicant in the Information Disclosure Statements filed on 02/24/2003 and 12/03/2004, have all been considered and made of record (note the attached copy of form PTO-1449).

Drawings

3. The drawings, filed on 11/27/2002, are accepted.

Specification

4. Applicants' cooperation is requested in correcting any errors of which applicants may become aware in the specification.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 6-9, 12, 31 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Amitay et al. (U.S. Patent 4,737,004).

With respect to claims 1, 31 and 33, Amitay et al. (figures 10 and column 1, lines 30-36) disclose an optical coupling system for coupling optical energy between optical devices, the system comprising a waveguide (61) receptive of N-mode radiation from a radiation source (column 1, line 30) where N is an integer; the waveguide (61) comprising a first section receptive of the N-mode radiation from the optical beam redirection device (63) and having a thickness of h (see figure 10); a second section having a thickness of t wherein t is less than h (see figure 10) ; and a tapered section having a first end thereof with a thickness of h joined with the first waveguide section and a second end thereof with a thickness of t joined with the second waveguide section for coupling the N-mode radiation from the first waveguide section to the second waveguide section (see figure 10).

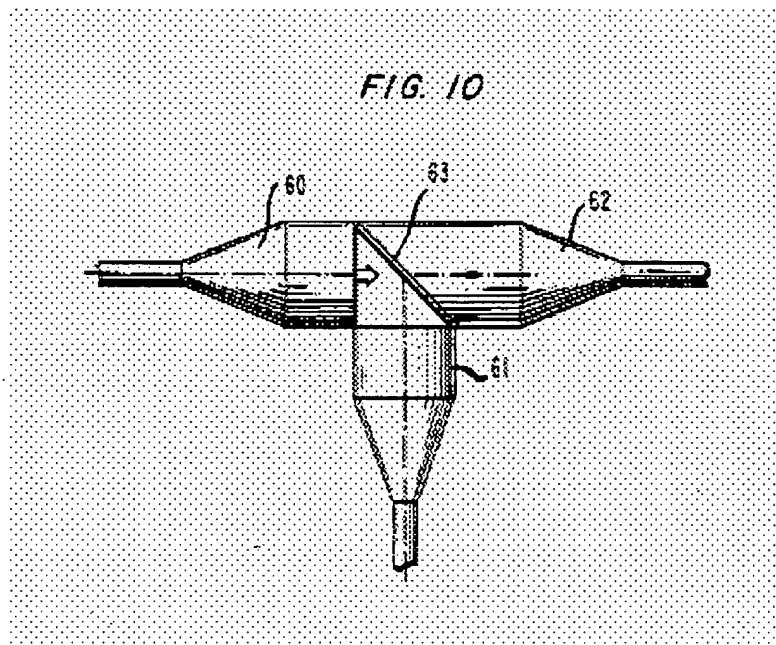
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With respect to claim 2, Amitay et al. (figures 9 and 10) disclose the optical coupling system, further comprising an optical beam redirection device receptive of the N-mode radiation from the radiation source for directing the N-mode radiation to the first waveguide section.

With respect to claims 6 and 7, Amitay et al. (figure 10) disclose the optical coupling system, wherein the optical beam redirection device comprises a prism (63), a lens or a diffraction grating.

With respect to claims 8 and 9, Amitay et al. (figure 10) disclose the optical coupling system, further comprising a cladding having a refractive index of n_w and encasing the waveguide having a refractive index of n_c ; wherein n_w is less than n_c and wherein the first waveguide section and the tapered section are defined by a refractive index, n_w , and the second waveguide section is defined by a refractive index, n_c , and wherein n_c is greater than n_w (column 3, lines 6-21).

With respect to claim 12, Amitay et al. (figure 10) disclose the optical coupling system, further wherein the second waveguide section includes a segment thereof positioned within the first tapered section.



Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that

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the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amitay et al. (as cited above).

With respect to claim 3, Amitay et al. (figure 10) substantially discloses all the limitations of the claimed invention, except Amitay does not explicitly disclose h is approximately 10 – 100 μm and t is approximately 2-10 μm .

However, the thickness h and t being within the range of 10 – 100 μm and 2-10 μm is considered to be obvious, since the optical coupling between optical devices is dependent on the choice of the fiber thickness. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the thickness of the fiber of Amitay's device within the range as claimed for the purpose of obtaining a better optical coupling, and it also has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art and it is noted that the applicant does not disclose criticality in the ranges claimed. *In re Aller*, 105 USPQ 233 (see MPEP § 2144.05).

With respect to claim 4, Amitay et al. (figure 10) substantially discloses all the limitations of the claimed invention, except Amitay does not explicitly disclose the tapered section has a length of 100 – 1000 μm .

However, the length of the tapered section being within the range of 100-1000 μm is also considered to be obvious, since the optical coupling between optical devices is dependent on the choice of the tapered fiber length. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the length of the tapered fiber of Amitay's device within the range as claimed for the purpose of obtaining a better optical coupling, and it also has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art and it is noted that the applicant does not disclose criticality in the ranges claimed. *In re Aller*, 105 USPQ 233 (see MPEP § 2144.05).

Allowable Subject Matter

10. Claims 5, 10, 11, 13-17, 32 and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art fails to disclose or reasonably suggest the optical coupling system, wherein the first end of the tapered section includes a first aperture and

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the second end of the tapered section includes a second aperture substantially parallel to the first aperture wherein the first and second apertures are spaced apart from one another so that the tapered section subtends a first angle, α , of about 5-10 degrees and a second angle, β , perpendicular to the first angle, α , of about 5-10 degrees at the second waveguide section as recited in claims 5, 32 and 34; further the second waveguide section is a cladding encasing the optical beam redirection device, the first waveguide section and the first tapered section as recited in claim 10; wherein the second waveguide section further comprises a top-layer tapered section wherein the refractive index difference between the second waveguide section and the tapered section is extended from an upper surface of the second waveguide section to a point along the tapered section as recited in claim 11; further wherein the segment of the second waveguide section positioned within the first tapered section is a wedge having a triangular in cross section including a base with a length t joined with the second waveguide section and an angled apex opposed to the base; wherein the wedge is receptive of the N-mode radiation from the first tapered section for coupling the N-mode radiation from the first waveguide section to the second waveguide section as recited in claim 13 and further wherein the second waveguide section includes a segment thereof positioned within the first tapered section and the first waveguide section.

11. Claims 18-27 are allowed.

The prior art also fails to disclose or reasonably suggest an optical coupling system for coupling optical energy between optical devices, the system

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having a second waveguide including a segment thereof positioned within the first waveguide as recited in claim 18; and a third section positioned within the tapered section, the third section having a refractive index of n_s and receptive of the N-mode radiation from the tapered section as recited in claim 26.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nagatani et al. (U.S. Patent 5,799,126) and Berthold, III et al. (U.S. Patent 4,413,879) disclose a light guide device.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Doan whose telephone number is (571) 272-2346. The examiner can normally be reached on Monday to Thursday from 6:00 am to 3:30 pm, second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in cursive script that reads "Jennifer Doan".

Jennifer Doan
Patent Examiner
April 1, 2005